

8.5 Noise

8.5.1 Affected Environment

8.5.1.1 Overview of Project Components

GWF Energy LLC proposes to build and operate the Tracy Peaker Project (TPP), a nominal 169-megawatt (MW) simple-cycle power plant, on a nine-acre, fenced site within a 40-acre parcel in an unincorporated portion of San Joaquin County. The site is located immediately southwest of Tracy, California, and approximately 20 miles southwest of Stockton, California. The TPP would consist of the power plant, an onsite 230-kilovolt (kV) switchyard, an approximately five-mile, 230-kV electric transmission line, an approximately 1,470-foot water supply pipeline (as measured from the fence line), an onsite natural gas supply interconnection, and improvements to an existing dirt access road approximately one mile in length. An approximately 5.2-acre area west of the plant fence line and within the 40-acre parcel would be used for construction laydown and parking. Figure 2-1 shows the regional location of the GWF site. Figure 2-2 shows the immediate site location of the GWF project, including the location of the proposed generating facility and the proposed transmission, water supply, and access routes.

In general, the topography of the area is flat, increasing in elevation approximately 0.75 miles southwest of the site towards Interstate 580 (I-580). The site, consisting mostly of soft ground, is undeveloped. The site is located adjacent to an Owens-Brockway glass container manufacturing plant, the Union (Southern) Pacific Railroad, the Delta-Mendota Canal, and rural agricultural uses. The nearest noise-sensitive receptor is located 2,550 feet southwest of the proposed plant's combustion turbines. The next nearest adjacent noise-sensitive receptor is located 2,740 feet west of the turbines. The third closest noise-sensitive receptor is located on Lammers Road, 3,810 feet east of the site. The linear routes for pipeline and electrical lines, which are an integral part of the TPP, are located primarily but not exclusively in non-noise-sensitive areas and they were found not to create noise impacts.

8.5.1.2 Acoustical Definitions

Sound levels are measured on a logarithmic scale in decibels, dB. The universal measure for environmental sound is the “A”-weighted sound level, dBA. “A” scale weighting is a “filter” or adjustment curve applied by the measuring instrument to shape the frequency content of the sound in a manner similar to the way the human ear responds to sounds. “Noise” is defined as unwanted sound.

The residual environmental noise level is the quasi-static noise level that exists in the absence of all identifiable, sporadic, individual noise events such as caused by automobile pass-bys, aircraft flyovers, intermittent dog barking, etc. In most environments this residual level is called the ambient or background noise level and is composed of the cumulative sum of all noise sources, both near and far, and includes indistinguishable noise from road transportation, fixed and mobile machinery, aircraft, and other natural and man-made sources. The ambient level varies slowly with time as these sources increase or diminish.

Because environmental noise varies with time, it is beneficial to define certain measurement terms that are used to characterize this fluctuating quantity. The true energy average level over a specific time period is defined as the equivalent level, abbreviated as L_{eq} . L_{eq} is the level over an interval that is equivalent to a perfectly constant level containing the same acoustic energy over the same interval. Thus, L_{eq} provides a measure of the true energy average sound level in an area and includes all sporadic or transient events. L_{eq} is usually measured in hourly intervals over long periods in order to develop 24-hour average noise levels. L_{eq} is generally used to measure noise affecting sensitive receptors where the noise source itself is not of special concern during evening and nighttime hours, or where the noise is only generated during daytime hours such as with construction activities. Where there is concern about nighttime noise, time-weighted descriptors are more appropriately used as discussed below.

Using L_{eq} as a “building block,” other descriptors of noise are commonly used to help predict an average community reaction to adverse effects of environmental noise including traffic-generated and industrial noise. These descriptors include the Day-Night Average Noise Level (L_{dn}), and (in California) the Community Noise Equivalent Level (CNEL). Each of these descriptors use units of dBA. Both L_{dn} and CNEL noise metrics represent 24-hour periods and

both apply a time-weighted factor designed to penalize noise events that occur during non-daytime hours, when relaxation and sleep disturbance is of more concern. In the case of CNEL, noise occurring during the daytime hours between 7:00 am and 7:00 p.m. receives no penalty. Noise occurring between 7:00 p.m. to 10:00 p.m. is penalized by adding 5 dB to the measured noise level, while noise occurring from 10:00 p.m. to 7:00 am is penalized by adding 10 dB to the measured level. L_{dn} differs from CNEL by adding only the 10 dB penalty between 10:00 p.m. and 7:00 a.m. Either CNEL or L_{dn} are mandated by state statute for noise/land use compatibility planning purposes and are the predominant metrics used by local governments to describe noise environments within their jurisdictions. The San Joaquin County Noise Element and Noise Ordinance utilize the L_{dn} , L_{eq} , and L_{max} descriptors to determine compliance with its regulations.

8.5.1.3 Ambient Noise Survey

In an effort to evaluate existing sound levels and assess any potential project noise impacts on the surrounding community, an ambient sound level survey program was conducted during June 14 and 15, 2001 on and around the proposed plant site and at selected offsite locations. The offsite locations represent the nearest and more distant residential receptors.

Figure 8.5-1 and Tables 8.5-1 and 8.5-2 illustrate and list the locations where the two unattended long-term (25-hour) and 13 attended short-term (less than 1-hour) measurements were conducted.

Both long-term monitors measured hourly noise levels during a 25-hour period from June 14 to June 15, 2001. The monitoring location designated Long-Term 1 (LT-1) was on the rear property line fence post of the first residence on Lammers Road south of the railroad tracks, easterly of the site. The noise monitor designated LT-2 was located at the eastern property point of the Lopez residence westerly of the plant site. The Community Noise Analyzers (CNAs) used for the long-term noise measurements were both Type 1 meters. LT-1 was a Metrosonics dB311 community noise analyzer and LT-2 was a Larson-Davis Model 820.

Short-term (10 to 15 minute duration) attended noise measurements were conducted during random morning, midday, afternoon, and nighttime hours at several locations

to corroborate the results of the long-term monitors and to allow for physical observations of the predominant local noise sources. The attended measurements were made with a Type 1 Brüel & Kjær Type 2231 sound level meter (SLM) with statistical analyzer.

The sound measuring instruments used for the survey were set to the slow time response and the A-weighted decibel (dBA) scale for all of the noise measurements. To ensure accuracy, the instruments were field calibrated before and after each measurement. The accuracy of the acoustical calibrator is maintained through a program established through the manufacturer and traceable to the National Institute of Standards and Technology. The sound measurement instruments meet the requirements of the American National Standard S 1.4-1983 and the International Electrotechnical Commission Publications 804 and 651. In all cases, the microphone height was 5 feet above the ground and the microphone was equipped with a windscreen.

Weather conditions during the survey period were warm to hot with clear skies. Air temperatures varied from 80 degrees Fahrenheit (°F) during the nighttime short-term measurements to a maximum of 98 °F during the daytime. Relative humidity varied between 13 percent to 24 percent. Winds varied from 0 to 10 miles per hour, varying from west to northeast. Overall meteorological conditions were conducive to accurate noise measurements. The weather observation notes and data collected during each attended measurement are included on the Field Noise Measurement Data forms contained in Appendix E.

The noise data for the long-term measurement surveys (Locations LT-1, and LT-2) is shown in Table 8.5-1, while the measured short-term noise levels are summarized in Table 8.5-2. Also, the hourly long-term data is supplied in Appendix E. Existing ambient noise at the proposed plant site is due to industrial activity, small-aircraft over flights and distant traffic noise. In the general area, the existing ambient noise is due to industrial facilities, motor-vehicle traffic, small aircraft, insects, and agricultural activities. North of the site is an existing industrial facility. Consequently, blower whine, backup alarms, heavy trucks, warning horns and other noise sources associated with industrial activities are the primary contributors to the noise environment in the area near the plant site. Noise levels from attended measurements at the boundaries of the plant site during the daytime ranged from 43 to 50 dBA L_{eq} .

8.5.1.4 Recommended A-Weighted Sound Level Design Goals

Several categories of land use are found in the vicinity of the proposed project site: industrial usage, which abuts the proposed site on the north, the Delta-Mendota Canal to the west and agricultural use to the south and east of the site. The nearest residential land use is southwesterly of the site. Other residential land uses potentially affected by the project exist to the west, northeast, east and southeast of the site. The nearest residential land uses are located 2,550, 2,740, and 3,810 feet, respectively from the acoustical center (combustion turbines) of the project site. Consistent with San Joaquin County noise regulations and noise ordinance, new-source noise impacts at residential receptors are evaluated with respect to specific performance noise level limits.

Applicable San Joaquin County noise standards are:

Allowable noise exposure at the location of outdoor activity areas, or in areas where this is unknown or is not applicable, at the property line of the receiving land use is 50 dBA L_{eq} during the daytime (7:00 to 22:00) and 45 dBA L_{eq} during the nighttime (22:00 to 7:00). Noise from construction activities is exempt between the hours of 6:00 a.m. and 9:00 p.m. on any day. Any activity whose regulation has been preempted by State or Federal law is also exempt.

The project site is not within the city of Tracy and not subject to its police powers. The nearest residential land use within the city of Tracy is approximately 4,400 feet to the northeast of the northeast corner of the 40-acre parcel.

For informational purposes, the City of Tracy noise regulations are:

The Noise Ordinance provides a limit of 75 dBA L_{eq} at the property boundary of the originating land use for agricultural and industrial districts, and 55 dBA L_{eq} for Residential Districts or Planned Unit Development (PUD) with residential use. Noise from construction activities is permitted between the hours of 7:00 a.m. and 10:00 p.m. The City's noise/land use compatibility standard for residential use is 65 dBA L_{dn} .

The California Energy Commission (CEC) regulations regarding noise, new-source noise impacts at residential/recreational receptors are evaluated with respect to the

increase over pre-existing noise levels. The CEC defines the area potentially impacted by the project as that area where there would be an increase above existing noise levels of 5 dBA or more during either construction or operation. The long-term noise measurements conducted during June 14–15 measured an L_{dn} of 52 dBA at LT-2, the second nearest residence to the project site. This noise level can be assumed to be the same at the nearest noise-sensitive receptor to the site. Thus, the CEC impact criteria threshold would be 57 dBA L_{dn} (52 dBA L_{dn} plus 5 dBA) at the nearest residence, 2,550 feet southwest of the project's nominal acoustical center. The maximum noise level contribution of the power plant at the nearest residence is 55 dBA L_{dn} , (equivalent to a continuous hourly noise level of 49 dBA L_{eq}) that yields an L_{dn} just under the 57 dBA criteria when added to the existing L_{dn} of 52 dBA.

The most stringent criteria for noise is 45 dBA L_{eq} at the nearest residence, 2,550 feet from the nominal acoustical center of the power plant, as required by San Joaquin County Noise Ordinance. The recommended A-weighted sound level design objective of 63 dBA L_{eq} at 400 feet would satisfy the CEC and local regulations.

8.5.1.5 Noise Prediction Modeling of Operational Noise

The preliminary plant design by the project engineer (Black and Veatch) includes a listing of each piece of major plant equipment and its associated noise level rating. This information provides the basis for this noise impact evaluation. The primary noise sources are anticipated to include two General Electric Frame 7EA combustion turbine generator (CTG) packages with Level 3 mitigation, the generator step-up transformers (GSUT), and the selective catalytic reduction (SCR) fan. Black and Veatch supplied URS with the octave band sound power levels (PWLs) of these major subcomponents. The PWLs were used to calculate the corresponding sound pressure levels (SPLs) for the equipment. Multiples of the same equipment type were accounted for and added together to estimate the total sound pressure level for all of the major equipment currently planned to be used on the site. The equipment noise sources were then added together to derive a composite total sound power source level and an acoustic center for all combined equipment to be used for the far field noise level predictions. The spectral PWL data for the major equipment and the resultant calculations are contained in Appendix E. The formula used to derive the sound pressure levels (in dBA) is as follows:

$$\text{SPL} = \text{PWL} - 20 \log r + 2.5 \text{ dBA}$$

where r is in feet

The predicted far field noise levels, in dBA, were then calculated. Additional propagation losses affecting the sound level due to distance, and air absorption were conservatively considered and subtracted based upon recognized standards.

Average meteorological conditions were also considered. Specifically, typical wind direction and speeds were evaluated to determine if significant influence on noise propagation would occur. Sound refracts downward when propagation is downwind, which may cause the loss or reduction of soft-ground attenuation, wooded attenuation or barrier insertion loss. Sideways to the wind direction, the wind has no effect. The effects of wind on noise levels are highly variable from moment to moment because of atmospheric turbulence. For nearly 50 percent of the year the wind direction is from the west to west-southwest. Wind speeds from these directions are predominantly between eight and 24 miles per hour. The TPP noise analysis conservatively considered propagation losses and does not account for soft-ground attenuation or wooded attenuation. Wind effects may increase noise levels by 5 dBA up to 10 dBA. The actual increase to calculated plant noise levels would be less because other losses, including those previously mentioned, were not accounted for in order to create a conservative estimate of plant noise level.

8.5.2 Environmental Consequences

8.5.2.1 Power Plant Operational Noise

The noise impact calculations indicate that the normal operational noise level from the proposed power plant is approximately 46 dBA L_{eq} at the nearest residential receptor location. This calculated level is above the design objective and the San Joaquin County noise standard at this location by only 1 dBA. The plant was modeled with the proposed Level 3 mitigation package applied to the GE Frame 7EA combustion turbine generators. An additional sound barrier is proposed to satisfy the design objective and achieve compliance with the San Joaquin County Standard.

Including this additional noise control feature, described in Section 8.5.3.1, the TPP also satisfies the CEC's noise regulations. Table 8.5-3 shows the predicted plant noise level with mitigation at the three closest receptors and at the nearest receptor in the city of Tracy. The check mark indicates whether the noise level complies with the applicable standards.

The area where there is a potential increase over existing noise levels of 5 dBA or more during normal plant operation is shown graphically on Figure 8.5-2, Site Vicinity Map with Noise Contour. Consistent with California Code of Regulations Section 65302 (f), and appropriate for noise/land use compatibility planning, L_{dn} was used for the comparison. As the table and figures illustrate, no dwellings or other noise-sensitive receptors are located within the area where the 24-hour Day-Night Noise Level is predicted to increase by 5 or more decibels. Thus, no noise impact area would be created by operation of the TTP.

Thus, operation of the proposed TPP with the outlined additional noise control feature implemented, would comply with local regulations, would not cause an increase in the ambient noise levels of 5 dB at a noise-sensitive location, and would not produce a significant noise impact. Wind effects may typically increase the noise level at LT-1R and ST-8 but it is not considered that this would cause an impact at these locations as they are well within the noise criteria.

8.5.2.2 Power Plant Construction Noise

The construction phase of the plant is scheduled to last approximately eight months. Construction laydown and parking areas would be west of the TPP plant site on the 40-acre parcel. Additional laydown area is available on the northeastern portion of the 40-acre parcel. Materials and equipment would be delivered by both rail and truck. Rail deliveries would use the existing rail corridor bordering the site to the north and truck deliveries would use the access road to the north of the site. During construction a number of pieces of construction equipment would be on site. The construction schedule currently assumes that construction activities would take place Monday through Saturday between the hours of 6:00 a.m. and 6:00 p.m. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities.

Bolt Beranek and Newman conducted an extensive field study of power plant construction noise that has produced the most comprehensive and realistic source of quantitative far field noise data. This study data was used to develop Table 5.12-4, which contains a sample of the construction equipment with the highest noise levels that may be on site at any given time during the eight-month construction period. If all of this equipment were to operate simultaneously at maximum power, a total noise level of approximately 89 dBA would occur at a distance of 50 feet from the acoustic center of the site. Accounting for the duty cycle of construction equipment and the attenuation of sound by distance, the typical equipment noise of 86 dBA at 50 feet would be reduced to a level of 50 dBA at a distance of 2,550 feet from the construction activity. The average existing sound level at residential receptors in the vicinity of the TPP during construction hours is 47 dBA L_{eq} . Thus, while construction noise could increase existing noise levels the increase would be less than 5 dBA L_{eq} . Also, very noisy construction activities are normally of short duration and do not occur all at the same time. Noise from plant construction would not cause an impact.

8.5.2.3 Transmission Line Operation

GWF is currently planning a five-mile-long electric transmission line that would interconnect the TPP with the existing Tesla Substation, located west of the project site. This comprises approximately 2.8 miles of new 230-kV transmission line following an existing transmission corridor, and 2.1 miles of reconducted transmission line. The transmission line is described in Section 6.0 (Electric Transmission). At the closest points, the transmission line passes 240 feet from a few residences located between the project site and I-580.

Noise sources associated with power transmission include occasional breaker operation in the switchyard, and corona noise and very low magnetostriction hum from the conductors. Breaker noise is considered impulsive in nature, lasting a very short duration and may occur only a very few times per year. Corona noise is characterized as a buzz or hum and is usually worse when the conductors are wet, such as in rain or fog.

The Electric Power Research Institute (EPRI) has conducted noise tests and studies and has published reference material on transmission line noise. EPRI states that noise produced by a conductor decreases at a rate of three decibels per doubling of distance from the

source. The EPRI *Transmission Line Reference Book* indicates that the audible noise from a typical 230-kV line with two conductors per phase would likely be less than 40 dBA at a distance of 40 feet from the outside conductor at ground level. If only one conductor per phase is used the noise level would be less.

Based upon this analysis of transmission line operational noise levels and the distance of 240 feet to the nearest noise-sensitive receptors, no significant noise impact would occur due to the transmission line. The switchyard is not proposed to be located near noise-sensitive land uses and thus, this project component would not create adverse noise impact.

8.5.2.4 Transmission Line Construction

Transmission line construction activities would mostly occur within open space/agricultural areas but would also occur near several scattered residences to the southwest of the plant site to the north of I-580. The proposed work schedule is Monday through Saturday from 6:00 a.m. to 6:00 p.m. Construction activities would consist of digging footings and placing concrete. Placing the steel towers would consist of using a crane to erect the tower and bolting sections of steel together. Conductors would be strung by conventional methods using cable trucks and winches. None of these activities would generate noise of an unusual nature, or on a long-term basis, or during nighttime hours.

There may be temporarily elevated noise levels for a very limited period due to construction of the transmission line at the few residences mentioned in Section 8.5.2.3. Elsewhere, because transmission line construction activities would be taking place within areas substantially removed from noise-sensitive land use no residences would be affected. Thus, no significant noise impact would occur due to construction of the transmission line.

8.5.2.5 Operation of Offsite Pipelines

The proposed project requires an offsite water supply pipeline. The pipeline would extend 1,470 feet from the TPP site to the southeast of the plant site, parallel to the Delta-Mendota Canal. The pipeline would be below ground and would not produce audible noise. Thus, there would be no noise impact created by the pipeline associated with the project.

8.5.2.6 Construction of Offsite Pipelines

As discussed above, a pipeline is proposed to be constructed off site as part of the project. The pipeline would be underground as discussed previously.

The methods to be used for constructing these pipelines would be trenching, pipe installation and backfill, and compaction. Scheduled work hours are Monday through Saturday between the hours of 6:00 a.m. and 6:00 p.m. Generally, linear projects of this type proceed in a sequential fashion from one section of pipe to the next, and can install several hundred feet of pipe per day. Thus, construction noise would be taking place at different locations along the route at any given time, and elevated noise levels at any one point are short-term, typically lasting less than a week. Listed in Table 8.5-5 are typical noise levels generated by pipeline construction equipment that would be used during the placement of the pipeline.

The nearest noise-sensitive receptors potentially affected by this phase of the project are located approximately 2,600 feet away (ST-5R and the nearest residence on Lammers Road). The average construction equipment noise levels would be 49 dBA at the nearest receptors which is less than 5 dBA higher than existing noise levels at these receptors as discussed previously. Because the construction activities would be moving along the route on a daily basis and the route is only 0.25 miles in length, the residences closest to the pipeline alignment would be exposed to short periods of construction noise above ambient lasting from a few hours to a few days as the construction progresses. Because the construction-phase noise would only marginally increase the existing ambient noise levels for a very limited duration during weekday daytime hours, construction of the pipelines would not cause a significant noise impact.

8.5.2.7 Operation of Access Road

The site would be accessed via an improved 0.6 miles asphalt-paved service road southward from W. Schulte Road to the northwest corner of the 40-acre parcel. The access road would be used for worker access and occasional materials delivery to the TPP site. Traffic on this road would be minimal and noise associated with use of the road would be insignificant at any noise-sensitive receptor. Noise associated with use of this road would not cause any impact.

8.5.2.8 Construction of Access Road

Construction of the access road would generate noise from the use of heavy machinery (graders, scrapers, bulldozers). The nearest noise-sensitive receptor is located 1,620 feet from the access road at the closest point. The noise from construction of the access road would be of very limited duration, occur during daytime hours, and attenuate with distance as discussed previously such that no adverse noise impacts would occur.

8.5.3 Noise Control Measures

8.5.3.1 Power Plant Operations

Noise-1: In order for the proposed power plant to comply with local and CEC noise regulations, one or more of the following mitigation measures must be implemented to achieve a 7-dBA reduction:

- soundwalls must be erected to screen each step-up transformer to achieve the appropriate insertion loss, or
- a low noise cooling fan package must be specified for the transformers, and/or
- other acceptable mitigation measures must be implemented.

With this noise control feature, the operation of the proposed plant will meet the sound level design goal and will not cause a noise impact during normal plant operating conditions.

Noise-2: Areas above 85 dBA will be posted as high noise level areas and hearing protection will be required. A hearing conservation program will be implemented as outlined in the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal-OSHA) regulations.

8.5.3.2 Power Plant Construction

Noise-3: Implementation of the following standard noise control practices prior to project construction, as necessary for each project component, would reduce construction noise levels to a less-than-significant level:

- The construction contractor will comply with all federal and local regulations on truck and construction equipment noise. The contractor will ensure the use of functioning exhaust mufflers and engine silencers on all engine-driven equipment, and avoid unnecessary equipment idling for long periods.

The use of noise-producing signals, including horns, whistles, alarms and bells, will be for safety warning purposes only.

No construction-related public address loudspeaker, two-way radio or music system will be audible at any adjacent noise-sensitive land use.

- The construction contractor will implement a noise awareness program for construction workers and a noise complaint process for the surrounding community. The onsite construction supervisor will have the responsibility and authority to receive and resolve noise complaints.

Noise-4: Areas above 85 dBA will be posted as high noise level areas and hearing protection will be required. A hearing conservation program will be implemented as outlined in Cal-OSHA regulations.

8.5.3.3 Transmission Line Operation

Operation of the high-voltage transmission line would not cause significant noise impacts; thus, no special noise control measure is required.

8.5.3.4 Transmission Line Construction

Noise-5: Construction equipment to be used for the transmission line construction will be fitted with properly functioning mufflers and engine silencing equipment. If

necessary, use of pile drivers, pneumatic hammers or other particularly noisy equipment will be limited in conformance with San Joaquin County's Noise Regulations. Movement of equipment will be scheduled to minimize noise affecting offsite locations. Construction activities will comply with applicable laws, regulations, ordinances, and standards (LORS).

8.5.3.5 Offsite Pipeline Operation

Because the offsite pipelines are underground, no special noise control is required.

8.5.3.6 Offsite Pipeline Construction

Noise-6: The pipeline will be located within an agricultural area with the nearest noise-sensitive use located 2,600 feet away. Construction of portions of the water pipeline will generate some elevated short-term noise levels in proximity to residential locations. In order to minimize this noise, all construction equipment will be fitted with functioning exhaust mufflers and engine silencers. Movement of construction equipment and material will be scheduled to take place during normal construction hours and all activities will be conducted according to normally permitted construction standards.

8.5.4 Compliance with Laws, Ordinances, Regulations, and Standards

The proposed facility would meet or exceed all applicable LORS pertaining to noise emissions. The following sections summarize LORS with respect to noise.

Proposed conditions of certification are contained in Appendix K. These conditions are proposed in order to ensure compliance with applicable LORS and/or to reduce potentially significant impacts to less-than-significant levels.

8.5.4.1 Federal

There are a number of laws and guidelines at the federal level that direct the consideration of a broad range of noise and vibration issues. Some of these areas of concern are not directly related to the proposed project. Several of the more significant documents are listed below:

- National Environmental Policy Act (42 United States Code [USC] 4321, et seq.) (Public Law-91-190) (40 Code of Regulations [CFR] Section 1506.5)
- Noise Control Act of 1972 (42 USC 4910)
- The U.S. Environmental Protection Agency (EPA) recommendations from *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, NTIS 550\9-74-004, USEPA, Washington, D.C., March 1974
- Federal Energy Regulatory Commission Guidelines on noise emissions from compressor stations, power plants, substations, and transmission lines (18 CFR 157.206[d] 5).
- Federal Highway Administration Noise Abatement Procedures (23 CFR Part 772)
- Housing and Urban Development Environmental Standards (24 CFR Part 51)
- OSHA Occupational Noise Exposure; Hearing Conservation Amendment (CFR 48 (46), 9738–9785 (1983))

The EPA has not promulgated standards or regulations for environmental noise generated by power plants. However, as listed above, the EPA has published a guideline (EPA Levels Document, Report No. 556/9-74-664) containing recommendations for noise levels affecting residential land use of L_{dn} 55 dBA for outdoors and L_{dn} 45 dBA for indoors. The agency is careful to stress that the recommendations contain a factor of safety and do not consider technical or economic feasibility issues, and therefore should not be construed as standards or regulations.

8.5.4.2 State of California

Cal-OSHA (8 California Code of Regulations, General Industrial Safety Orders, Article 105, Control of Noise Exposure, Section 5095) requires that all in-plant noise levels be limited to 85 dBA at 3 feet from equipment sources to protect worker safety. If areas of the plant

exceed 85 dBA, then all aspects of the hearing conservation program must be implemented by the employer.

There are likely to be areas within the plant with noise levels above 85 dBA, but none of them can be considered a normal stationary eight-hour working station. Full-time operations and maintenance personnel would have only limited exposure to these high noise areas under most circumstances. In areas where 85 dBA is typically exceeded, signs would be posted requiring the use of hearing protection. Additionally hearing conservation programs must be implemented.

The state also requires local jurisdictions (CCR 65302f) to prepare General Plans that include Land Use and Noise Elements. Noise Elements must use the CNEL or alternatively the L_{dn} noise descriptor to assess noise/land use compatibility.

The CEC (1997) expresses concern for residences, hospitals, libraries, schools, places of worship, or other facilities where quiet is an important attribute of the environment within the area impacted by the proposed project. The area impacted by the proposed project is that area where there is a potential increase of 5 dBA or more, during either construction, or operation, over existing levels.

8.5.4.3 Local Noise Regulations

The project is governed by San Joaquin County Noise Control Policies and Ordinance. A residential development is located at some distance from the plant in the city of Tracy. Project noise effects need to comply with the noise limits established for noise-sensitive uses (e.g., residential) within the respective jurisdictions.

8.5.5 Agency Contacts

Agency	Contact/Title	Telephone
County of San Joaquin Community Development Department 1400 W. Lacey Boulevard Hanford, CA 93230	Chandler Martin Senior Planner	(209) 468-3144

Agency	Contact/Title	Telephone
City of Tracy Department of Development and Engineering Services 520 N. Tracy Boulevard Tracy, CA 95376	Mr. William Reeds Director of Development and Engineering Services Mr. Bill Dean Associate Planner	(209) 831-4600

8.5.6 Schedule of Other Required Permits/Approvals

No permits or additional approvals are required.

8.5.7 References

Beranek and Ver. 1992. *Noise and Vibration Control Engineering, Principles and Applications*. Wiley Interscience. New York.

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TABLES

Table 8.5-1
Long-Term Noise Level Summary June 14–15, 2001

Site ID	Location	25 hr L_{eq}	L_{dn}	CNEL	25 hr Average L₉₀	25 hr Average L₅₀	25 hr Average L₁₀
LT-1	West property line fence of residence on Lammers Rd., south of railroad tracks (east of site)	48	54	54	40	43	50
LT-2	North property line fence of Lopez residence (west of site)	45	52	53	39	42	46

Table 8.5-2
Short-Term Noise Measurements June 14–15, 2001

Site ID	Measurement Location of Property Line	Measurement Period				Measurement Results, dBA					
		Date	Start Time	Duration (min)	Predominant Noise Sources	L _{eq}	L _{max}	L _{min}	L ₉₀	L ₅₀	L ₁₀
ST-1	West property line fence of residence on Lammers Rd, south of railroad tracks (LT-1)	6/14/01	11:50	10	Birds, aircraft, distant industrial	40	53	34	36	38	42
ST-2	Midpoint of west site boundary	6/14/01	13:30	15	Industrial, distant aircraft, distant traffic	43	56	37	39	42	46
ST-3	North site boundary	6/14/01	14:00	15	Industrial, aircraft overhead	50	58	47	49	50	52
ST-4	Residence on frontage road parallel to I-580	6/14/01	16:05	15	Birds, traffic, distant industrial	43	56	36	40	42	46
ST-5	Barn southwest of site, south of Delta-Mendota Canal	6/14/01	16:45	10	Industrial, distant overhead aircraft	39	52	35	36	38	41
ST-5B	Barn southwest of site, south of Delta-Mendota Canal	6/14/01	22:55	10	Crickets, traffic, distant aircraft, and distant dogs barking	44	50	39	41	43	46
ST-6	On north levee of Delta-Mendota Canal next to residence with baseball diamonds	6/14/01	22:30	15	Crickets, traffic, distant aircraft	43	49	39	40	43	45

Table 8.5-2 (continued)
Short-Term Noise Measurements June 14–15, 2001

Site ID	Measurement Location of Property Line	Measurement Period			Predominant Noise Sources	Measurement Results, dBA					
		Date	Start Time	Duration (min)		L _{eq}	L _{max}	L _{min}	L ₉₀	L ₅₀	L ₁₀
ST-7	On north levee of Delta-Mendota Canal east of Hansen Rd. adjacent to residences	6/14/01	23:20	10	Industrial, distant aircraft, distant traffic, distant dogs barking	54	58	51	53	54	55
ST-8	3253 Patina Ct., Redbridge Estates	6/14/01	23:50	10	Industrial, traffic, distant aircraft, crickets, distant dogs	44	52	40	41	43	46
ST-9	Adjacent to farmhouse northwest of Schulte Rd. and Lammers Rd.	6/15/01	11:15	15	Traffic, birds, distant industrial, and distant aircraft	47	55	41	43	46	50
ST-10	On levee of Delta-Mendota Canal, near farmhouse, south of railroad tracks	6/15/01	11:45	15	Aircraft, birds, distant traffic	45	60	34	36	40	49
ST-11	Across from 27081 Lammers Rd.	6/15/01	12:15	10	Birds, distant traffic, dogs barking	39	50	32	35	37	42
ST-12	Southeast site corner	6/15/01	12:43	10	Industrial, distant aircraft, distant traffic	43	49	38	40	42	45

Table 8.5-3
Compliance With Residential Standards – DBA
 ✓ = Satisfied

Location	San Joaquin₄₅	Tracy₅₅ Leq / 65L_{dn}	CEC+5L_{dn}
ST-5R	45.0 ✓	n/a	✓ by 4
LT-2R	42.5 ✓	n/a	✓ by 6
LT-1R	38.1 ✓	n/a	✓ by 12
ST-8	n/a	33.6 ✓	✓ by 17

n/a = not applicable

Table 8.5-4
Maximum Noise Levels From
Typical Construction Equipment

Equipment	Estimated Maximum Sound Level at 50 feet (dBA)
Backhoe	83
Large Mobile Crane	85
Dozer	88
Grader	86
Scraper	89
Dump Trucks	87

Table 8.5-5
Noise Levels From Typical
Pipeline Construction Equipment

Equipment	Average Noise Level, Leq @ 50 feet (dBA)
Paver	82
Trencher	82
Water Truck	84
Side-Boom Hoist	85
Masonry Saw	78
Backhoe	85
Jack Hammer	88

Table 8.5-6
Laws, Ordinances, Regulations, and Standards Applicable to Noise

LORS	Applicability	Conformance (Section)
Federal		
EPA 1974 Noise Guidelines	Guidelines for state and local Governments.	N/A
The Occupational Safety and Health Act of 1970 (OSHA), (29 CFR § 1919 et seq.)	Guidelines for exposure of workers to noise during construction and operations.	Sections 8.5.3.1, 8.5.3.2
Noise Control Act (1972) as amended by the Quiet Communities Act (1978); (42 USC 4901–4918)	Separate noise-sensitive areas are encouraged.	N/A
State		
Rules of Practice and Procedure & Power Plant Site Certification Regulations (CEC, 2000)	Defines noise impacts at residential/recreational receptors in relation to an increase over pre-existing background noise levels.	Section 8.5.2
Cal-OSHA Occupational Noise Exposure Regulations (8 CCR, General Industrial Safety Orders, Article 105, Control of Noise Exposure, § 5095, et seq.)	Sets employee noise exposure limits. Equivalent to federal OSHA standards.	Sections 8.5.3.1, 8.5.3.2
California Noise Control Act of 1973 (California Health and Safety Code, Division 28)	Comply with local noise ordinances.	N/A

Table 8.5-6 (continued)
Laws, Ordinances, Regulations, and Standards Applicable to Noise

LORS	Applicability	Conformance (Section)
Local		
San Joaquin County, 1999, Section 9-1025.9 Noise	Allowable noise exposure at the location of outdoor activity areas, or in areas where this is unknown or is not applicable, at the property line of the receiving land use is 50 dBA L_{eq} during the daytime (7:00 to 22:00) and 45 dBA L_{eq} during the nighttime (22:00 to 7:00).	Section 8.5.2
San Joaquin County, 1999, Section 9-1025.9 Noise	Noise from construction activities is exempt between the hours of 6:00 a.m. and 9:00 p.m. on any day. Any activity whose regulation has been preempted by state or federal law is also exempt.	Section 8.5.2
City of Tracy, 1993, General Plan, Chapter Six - Noise Element	The City's noise/land use compatibility standard for residential use is 65 dBA L_{dn} .	Section 8.5.2 (not applicable to project)
City of Tracy, Municipal Code, Article 9, Noise Control	Provides a limit of 75 dBA L_{eq} at the property boundary of the originating land use for agricultural and industrial districts. Limit for Residential Districts or PUD with residential use is 55 dBA L_{eq} .	Section 8.5.2 (not applicable to project)
City of Tracy, Municipal Code, Article 9, Noise Control	Noise from construction activities is permitted between the hours of 7:00 a.m. and 10:00 p.m.	Section 8.5.2 (not applicable to project)

FIGURES

Figure 8.5-1

Figure 8.5-2